

Remarks/Arguments

Applicants' disclosure is directed to a projection display apparatus. The apparatus uses an optical modulator to form an image. The apparatus includes a light source that illuminates the optical modulator, a first lens array, a second lens array and an optical modulator. Each lens array includes multiple lenses. A diaphragm mechanism is located between the light source and the optical modulator. The diaphragm mechanism controls the amount of the light emitted from the light source that will ultimately illuminate the optical modulator.

Claim 1 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Dubin et al. (U.S. Patent Number 6,769,777 B1). It is respectfully submitted, however, that the claims are patentable over the art of record for the reasons set forth below.

Dubin is directed to a multi-aperture optical dimming system. The system includes multi-aperture dimmer 150 located between first lens array 106 and second lens array 108. The dimmer is made up of two movable attenuators. As shown in Figs. 7-9, the attenuators have openings corresponding to respective lenses of the lens array. The openings are either a v-shape, a compound v-shape or a curved shape. See Figs. 7-9. The attenuators overlap and slide over one another to either expand or narrow attenuator openings, thus adjusting the amount of light let through the openings. Applicants' invention, as recited by claim 1, includes a feature which is neither disclosed nor suggested by the art of record, namely:

... a diaphragm mechanism ...

... the diaphragm mechanism has a diaphragm blade or a pair of diaphragm blades ...

... the diaphragm blade or the each of the pair of diaphragm blades has a stepwise shape. (emphasis added)

In the exemplary embodiment described in Applicants' disclosure, this means that the diaphragm is made up of at least one blade. The blade is cut at one end to form a step shape. Each step corresponds to the width of a particular lens of the lens array. This feature is found in the originally filed application at page 8, lines 21-24, page 9, lines 5-26 and Figs. 5-8. No new matter has been added.

Fig. 5 of Dubin shows a set of movable attenuators 502 and 504. As shown, each movable attenuator has three openings. The openings are rectangular in shape, with V-shapes cut out in areas corresponding to particular lenses of the lens array. On the other hand, as shown in Applicants' Figs. 5-8, Applicants' diaphragm has at least one blade that is cut at the end to form a step shape. As shown, each step (shaded portions) corresponds to a width of a particular lens of the lens array. For example, as shown in Fig. 6, a step of the blade covers 1/3 the area of lenses 201 and 206, 2/3 of the area of lenses 202 and 205 and the entire area of lenses 203 and 204.

This is different because Applicants' diaphragm blade and Dubin's attenuators are cut to form different shapes with respect to lenses of the lens arrays. Further, Applicants' diaphragm blade is cut at the end; whereas Dubin's attenuators are cut in the middle. In this way, Applicant's blades cover different areas of each lens of the lens array; whereas Dubin's blades cover the same area of each lens of the lens array.

It is because Applicants' include the feature of the diaphragm blade or the each of the pair of diaphragm blades has a stepwise shape, that the following advantages are achieved. First, the step shaped blade allows the border between a light-shielded dark area and non-light-shielded bright area to differ between lenses. As a result, a border between brightness and darkness of each lens is not conspicuous when viewing a projected image. Second, it allows for uniform illumination of the liquid crystal display panel while restricting or expanding the amount of light let through.

Accordingly, for the reasons set forth above, claim 1 is patentable over the art of record.

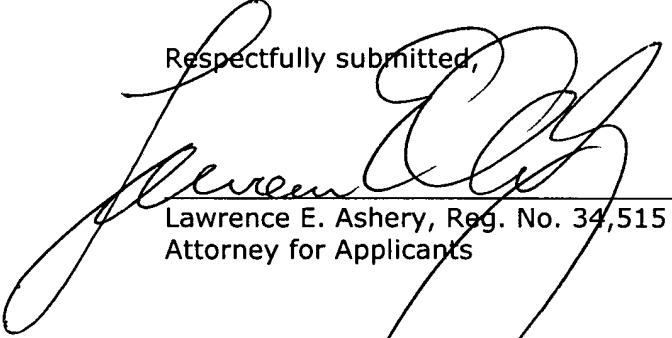
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Claims 2-5 and 7-10 include all the features of claim 1 from which they depend. Thus, claims 2-5 and 7-10 are also patentable over the art of record for the reasons set forth above.

In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,


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